The figures should first be outlined lightly in pencil or in white chalk, and then be finished with India ink and water colors of the desired shades.

Any student assistant can, with care, make very creditable charts, or they may be obtained by having each student in a technic course make a chart, or a part of one, as a part of the work of the course.

Diagrams and figures representing sections are very easily drawn; surface views and dissections require more artistic skill.

The ink and the water colors can be applied without difficulty with ordinary camel's hair brushes.

The chief advantage in making these charts is that the exact series of figures desired for any particular course may be copied from well known sources.

A. M. Reese.

It is a pleasure to announce that Mr. Ernst Leitz of Wetzlar, Germany, has been awarded the degree of Doctor of Philosophy by the University of Marburg in recognition of his distinguished services to science thru the making of optical instruments during the last half century.

Major E. V. Elwes, in the Journal of Marine Biological Association of the United Kingdom for 1910, furnishes some very valuable analytic keys to the genera of littoral polychetes from the shores of the English Channel.

THE BUILD OF A MICROSCOPE

A comparison between the Microscopes of say 20 years ago and of the present day discloses many modifications in construction and design. In place of the former tall instrument in bright brass frequently with considerable more vibration than could be tolerated nowadays, we have the compact, sombre-looking models with which present day workers are familiar.

In a microscope stand, rigidity and freedom from spring when the various parts are brought into working are extremely desirable, but are very difficult to attain with high power oil immersion objectives. Much of this spring is observable when pressure is put on the stage to move the object in the field. A step in the right direc-

tion has been made in the general construction of microscopes by abandoning the many separate parts in favour of large portions cast in one piece of metal. This method is one which the firm of W. Watson & Sons Limited, 313, High Holborn, London, W. C., have pursued with conspicuous success for several years past. There must necessarily be separate parts, but this firm has shown a way in which, by interlocking, those parts which must be joined together may be made equal to solid metal, and the arrangement which has been so much appreciated by users of their Van Heurck microscopes has now been made use of in their improved model of the Royal Microscope.

We append two illustrations showing the way in which this is effected.

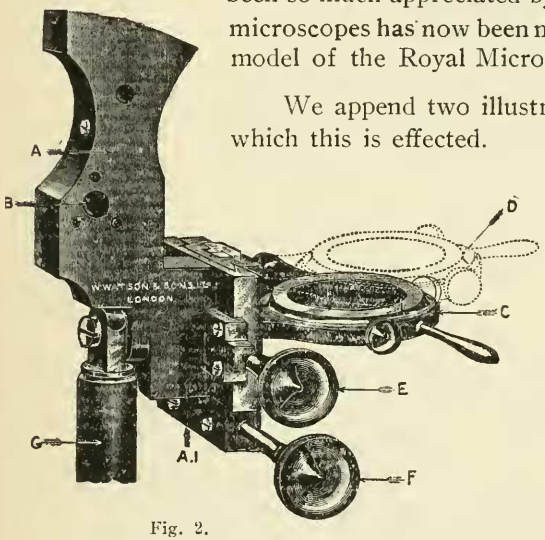

Fig. 2.

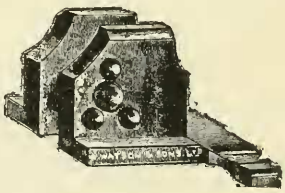

Fig. 1.

Fig. 1 shows the back end of the stage where it is attached to the limb. It will be noticed that rising from the surface are two cheeks which fit on either side of the limb and are secured to it by 3 screws on each side, and the bolt for the inclining joint passes through the centre of the whole. Obviously a stage attached in this manner must be vastly stronger than one that is merely dependant on attaching screws for retaining it in its position, and a practical use of a stage built under these conditions soon discloses its wonderful rigidity.

In pursuance of the scheme already utilized, it will be noticed that the limb is continued below the stage in one piece, and to the face of it is attached, beneath the stage a substage with its coarse

and fine adjustments. This is shown in Fig. 2 and the letters refer to the following parts:

A. The Limb.
A1. The Limb continued downwards to carry Substage.
B. The bolt hole for the inclining joint.
C. Substage condenser carrier.
D. The same fitting swung out of the optical axis.
E. Fine adjustment milled head.
F. Coarse adjustment milled head.
G. Tail-piece carrying the mirror.

The matter is one which is of considerable interest to microscopists, especially those who are interested in high power work with the best means available, and it is an indication of the way in which the building of the most accurate of all instruments may be solidified and improved.

THE LEITZ DOUBLE DEMONSTRATION EYEPIECE WITH POINTER

This eyepiece is an important addition to the many practical, auxiliary apparatus intended to *facilitate microscopical* teaching, *thus saving time.*

THIS DOUBLE DEMONSTRATION EYEPIECE, with pointer, is an instrument the need of which was seriously felt for a long time. It has been constructed with a special view *to help the teacher in* demonstrating a particular object in the visual field of a Microscope.

It is used like any ordinary Eyepiece, by simply placing it into the draw tube of a Microscope. *It enables two observers to view, simultaneously, the image* which is produced and by means of the pointer they may *demonstrate mutually any part* of the image.

The pointer is universally adjustable by a ball joint and can be moved forward or backward, thus the whole field can be easily covered.

The construction of the Apparatus may be easily understood from the accompanying illustration: